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KONA MICRO PoE GATEWAY

USER GUIDE

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PROPRIETARY:

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1 Product Description

1.1 Overview

The Kona Micro PoE Gateway is a LoRaWAN IoT gateway that supports the full range of LoRa WAN channels. The Gateway supports one external LoRa antenna, copper Ethernet backhaul, and optional 3G/4G wireless backhaul. All Gateway models are powering from an AC-DC power adapter and may optionally have an internal backup battery provisioned.

Table 1 presents the currently available Kona Micro PoE Gateway models. Any model may have a backup battery provisioned.

Table 1: Kona Micro Gateway Models

Model	Modem	Region	Frequency Band
T0006268 T0006580 T0007915	✓	North America	915
T0006267 T0006581 T0007916		North America	915
T0006458 T0006582 T0007917	✓	Europe 863-870	863-870
T0006457 T0007918		Europe 863-870	863-870
T0006562	✓	Brunei, Cambodia, Indonesia, Laos	923-925
T0006563		Brunei, Cambodia, Indonesia, Laos	923-925
T0006564	✓	Japan	920-928
T0006565		Japan	920-928
T0006566	✓	New Zealand	915-928
T0006567		New Zealand	915-928
T0006568	✓	Singapore, Thailand, Vietnam	920-925
T0006569		Singapore, Thailand, Vietnam	920-925
T0006570	✓	Taiwan	922-928
T0006571		Taiwan	922-928
T0006572	✓	China	780
T0006573		China	780
T0006574	✓	China	470
T0006575		China	470
T0006576	✓	Australia	915-928
T0006577		Australia	915-928
T0006578	✓	Australia (Tern)	915-933
T0006579		Australia (Tern)	915-933

Figure 1 illustrates the Kona Micro PoE Gateway external form-factor with the front view on the top and rear view on the bottom. All models share the same mechanical form-factor.

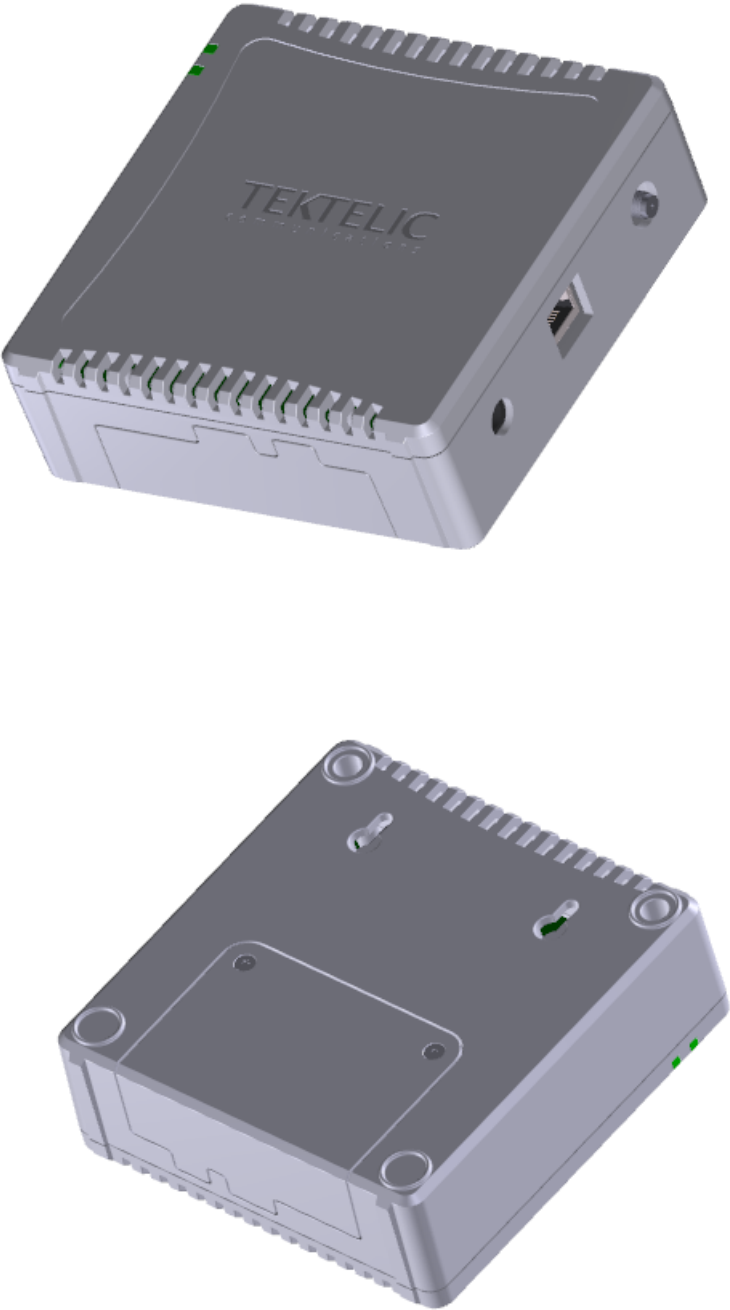


Figure 1: Kona Micro PoE Gateway

1.2 Physical Interfaces

Figure 2 illustrates the connector layout for the Kona Micro PoE Gateway.

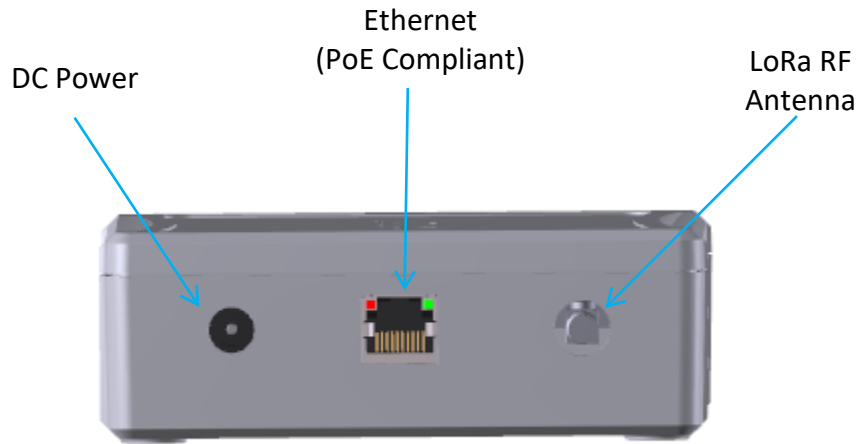



Figure 2: Kona Micro Gateway Bulkhead Layout

The Gateway connectors are listed in Table 2.

Table 2: Kona Micro PoE Gateway Interface Connector Types

Interface	Connector Type	Mating Connector
LoRa Antenna Ports	Reverse SMA female	Industry standard Reverse SMA male
DC Power Input Port	Barrel Jack	DC Barrel plug 2.1 mm (inner), 5.5 mm (outer) Center positive 
Ethernet Port	RJ-45	Industry standard RJ45 plug (PoE compliant)

1.3 Specifications

The Kona Micro PoE Gateway specifications are listed in Table 3.

Table 3: Kona Micro PoE Gateway Specifications

Attribute	Specification
Dimensions	120 (L) x 118 (W) x 41.5 (H) mm
Weight	336 g (0.74 lbs) with battery, 245 g (0.54 lbs) without battery
Operating Temperature	0°C to 40°C without battery 0°C to 38°C with battery
Relative Humidity	5 to 95 %RH
Operating Altitude	-60 m to 4,000 m (-197 ft to 13,123 ft)
Power Input, DC Port	12 VDC +/-10%
Power Input, PoE	IEEE 802.3af, IEEE 802.3at, IEEE 802.3bt, Mode A or Mode B or 4-pair Mode 48 VDC nominal, 37 to 57 VDC operating range
Power Consumption	12 W maximum DC input, 13 W maximum PoE input
Battery	7.4 V Lithium Ion
Ingress Protection	Indoor use only
Regulatory Compliance	IEC 62368-1, EN 62368-1, CE FCC Pt. 15, RSS-247, EN 301 489-1

2 Installation

2.1 Overview

- The Kona Micro PoE Gateway is intended for indoor use only.
- The Kona Micro PoE Gateway has no internal field serviceable parts other than the battery. Other than installing or replacing the battery, the Gateway module must only be opened by an approved TEKTELIC service center.
- All installation practices must be in accordance with the local and national electrical codes.
- Ensure that the Kona Micro PoE Gateway is located to eliminate any physical hazard to people or property.
- The Kona Micro PoE Gateway shall be powered from the supplied AC-DC power adaptor or through Power over Ethernet (PoE). Simultaneous application of power to both inputs may result in unexpected operation and shall be avoided.
- Do not cover the Gateway or in any way obstruct airflow through the enclosure openings.
- The Kona Micro PoE Gateway may as an option contain a built-in battery. The Gateway may continue to operate after the DC power or PoE connection is removed. To completely power down the Gateway when battery backup is present, the DC power source, the PoE source, and the battery must all be disconnected.
- If the battery needs replacement, use only a replacement battery provided by Tektelic Communications Inc. After battery installation, ensure that the battery cover is secured using the supplied battery cover securement screws. Dispose of old batteries in accordance with regulatory requirements.

2.2 Unpacking and Inspection

The following should be considered during the unpacking of a new Kona Micro PoE Gateway.

1. Inspect the shipping carton and report any significant damage to TEKTELIC.
2. Unpacking should be conducted in a clean and dry location when possible.
3. Do not discard the shipping box or foam inserts as they will be required if a unit is returned for repair or re-configuration.

2.3 Kona Micro PoE Gateway Mounting

Kona Micro PoE Gateway can be placed on a flat surface or can be mounted to a wall with M3 screws to the locations on the back of the module illustrated in Figure 3.

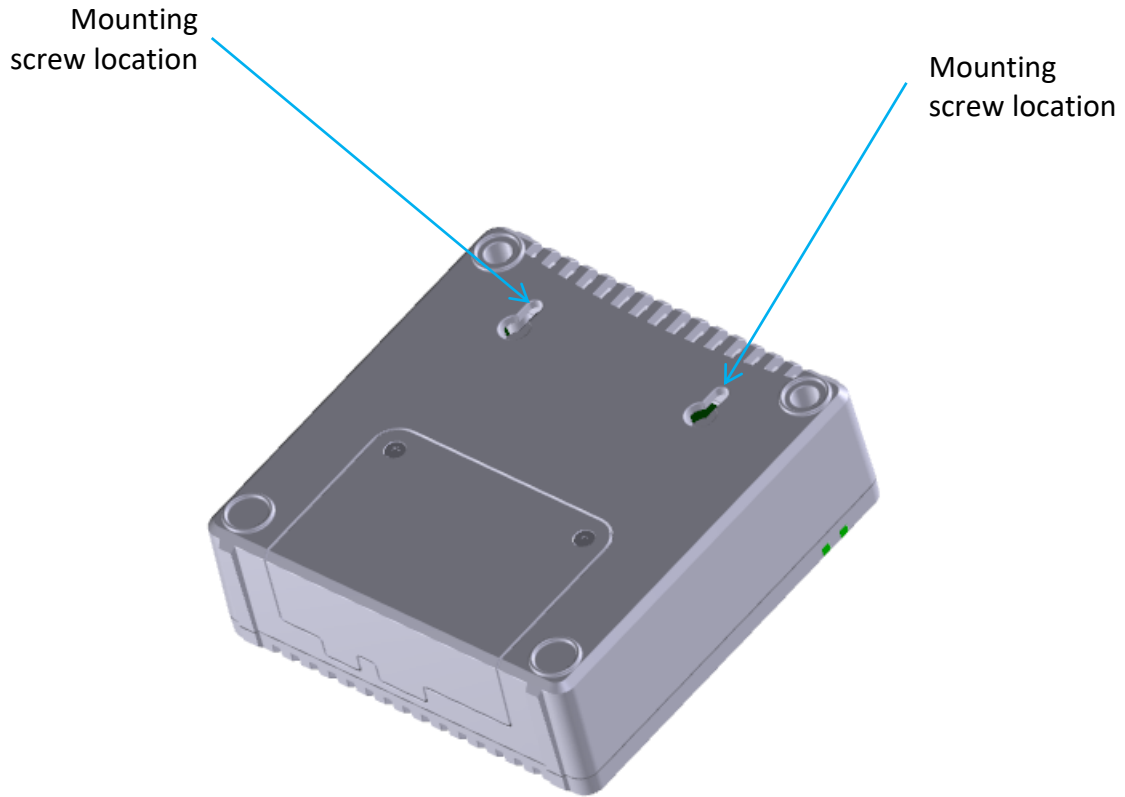


Figure 3: Kona Micro PoE Gateway Mounting Screw Locations

While wall mounted, the Gateway module must be oriented with the TEKTELIC logo horizontal, parallel to the earth as shown in Figure 4.



Figure 4: Kona Micro PoE Gateway Module Wall Mounting Orientation

Ensure that the wall on which the Gateway is being mounted is secure, flat and able to support a load of at least 0.5 kg (1.1 lbs).

The Kona Micro PoE Gateway wall mounting procedure is as follows:

1. Install the M3 screws into the wall.
2. Install 2 site supplied M3 screws into the wall at 60 mm (2.4") center spacing, leaving the screw heads protruding with a 3 mm gap from the wall surface.
3. Hang the Kona Micro PoE Gateway by mounting the two to keyhole slots onto the screws.

2.4 DC Power Cable Installation

The Kona Micro PoE Gateway may be powered from the supplied AC power adaptor. The AC adaptor provides 12 VDC with positive inner tip as shown below in Figure 5. The connector tip is a standard DC Barrel connector-straight plug with 2.1 mm (inner), 5.5 mm (outer) diameters.



Figure 5: DC Power Connection Polarity

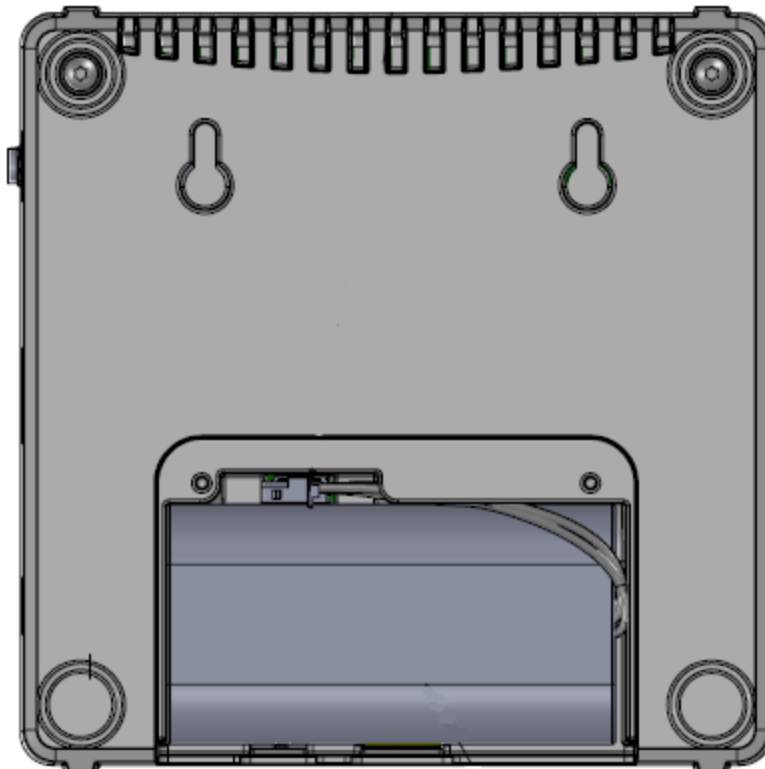
2.5 Battery Installation

Use only the battery provided by Tektelic Communications Inc.

CAUTION: Risk of explosion if the battery is replaced by an incorrect type.

Remove the battery cover by removing the two battery cover securement screws. Connect the 3-pin battery connector to the connector at the bottom of the battery compartment and then insert the battery into the battery compartment as illustrated in Figure 6. After the battery is connected and inserted, reinstall the battery cover and secure it in place using the two battery cover securement screws.

Dispose of old batteries in accordance with regulatory requirements.



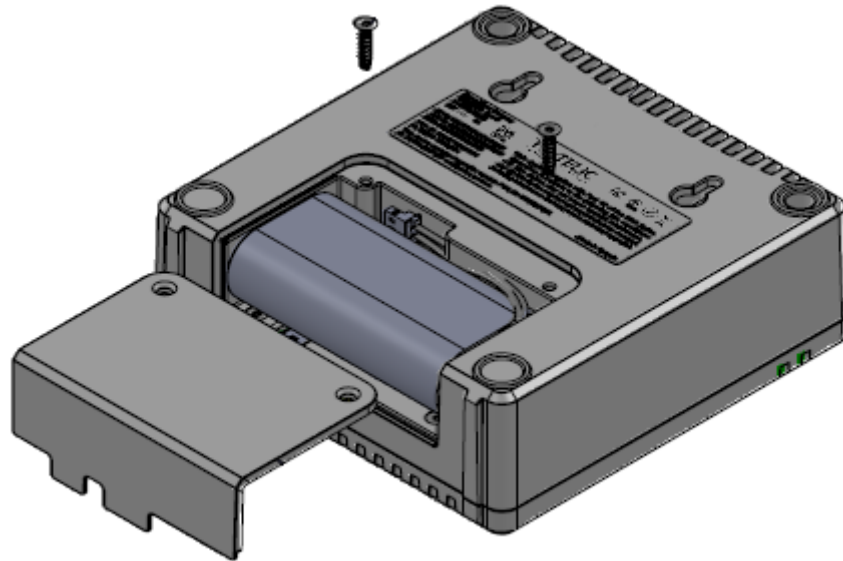


Figure 6: Battery Installation

2.6 RF Cable Installation

The Kona Micro PoE Gateway installation requires connection to an RF antenna. The antenna attaches to the reverse SMA connector located on the side of the Gateway. Torque the connector to 5 in·lbs. The Kona Micro PoE is not protected from lightning surge as it is intended for Indoor use. Do not connect directly to an outdoor antenna.

2.7 Copper Ethernet Cable Installation

The Kona Micro PoE Gateway Ethernet port may be used on a temporary basis for commissioning and maintenance or may be permanently connected for backhaul and optionally Power over Ethernet.

The Ethernet cable must have minimum 24 AWG conductors and shall be rated for indoor application according to local and national electrical codes.

3 Radio Compliance Statements

Federal Communications Commission

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To comply with FCC/IC RF exposure limits for general population / uncontrolled exposure, the antennas used for this transmitter must be installed to provide a separation distance of at least 80 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Industry Canada

This Device complies with Industry Canada License-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

This radio transmitter 22504-T0005281 has been approved by Industry Canada to operate with the antenna listed below with the maximum permissible gain or lesser and required antenna impedance for the antenna indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.


This device complies with IC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with minimum distance 0.3 m between the radiator and your body.

This device has been designed to operate with the antenna listed below, and having a maximum gain of 2.7 dBi. Antennas not included in this list or having a gain greater than 2.7 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Antenna: ET830DBLTRPSMA – Airgain, Inc.

During product operation, always keep a separation distance of at least 11.8 inches (0.3 m) from any connected antenna(s). Before servicing the product, the antenna(s) or cables, turn off the transmission function or the unit power if you have to get closer than the minimum separation distance.

Proposition 65

 **WARNING:** This product can expose you to chemicals including lead, beryllium, cobalt oxide, nickel oxide, carbon black and lithium nickelate & nickel, which is known to the State of California to cause cancer, birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.